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Nineteenth Century,' 19 pages; Section VII., 'Periodicals,' 11 pages; Section VIII., 'Academic Dissertations,' 167 pages; subject-index, 66 pages.

Doctor Bolton died on November 19, 1903, while the book was passing through the press and most of the proofreading, as well as the preparation of the index, was done by Mr. Axel Moth, of the New York Public Library. This work has been done with a care and excellence that could hardly have been surpassed by Dr. Bolton himself.

Reference has been made in a previous review to the great value of the list of academic dissertations, and increased value is added by the continuation of the list through 1902 in the present supplement. It is to be hoped that at least this portion of the work will from time to time be brought down to date.

In this connection it is interesting to note not only the great amount of this literature but also the sources from which it emanates. The list includes for the five years, 1898-1902, about 2,350 dissertations, or nearly 500 a year. As we should expect, the dissertations from the University of Berlin head the list, about ten per cent. emanating from this source. It is, however, a surprise to find that the rather unfamiliar University of Rostock comes next with only a dozen less dissertations to its credit. Heidelberg stands a little lower in numbers. Next come Munich, Erlangen and Freiburg in Baden, with about 160 each, and then Leipzig, which we should expect to find relatively much higher in the list, with 130. Basel and Marburg are the only other universities which reach 100. Zürich furnishes about 70 dissertations and then come Bern, Breslau, Freiburg in Switzerland, Geneva, Giessen, Göttingen, Halle, Kiel, Tübingen and Würzburg, each with about 50. This list probably furnishes a pretty good index of the quantity of chemical work done at the different universities, but it must not be overlooked that it is a common practise for students to go for their diplomas to a university where the requirements are known to be less rigid than at Berlin or Leipzig.

The loss of Dr. Bolton to the chemical world is great. Aside from his other work in chem-

istry, in two fields he was almost unique. As an antiquarian he was always bringing up interesting and valuable information from his rich mine of historical knowledge of the early days of chemistry and alchemy. But, perhaps, it is as a bibliographer of chemistry he will be best remembered. His 'Select Bibliography of Chemistry' might almost be considered a monumental work, so great is its scope and so thoroughly is it carried out. While it has the title of 'select' rather than 'complete,' it is remarkable how little material of value is omitted. It is safe to say that his work is final as far as it goes. His bibliographical work is not limited to that which he personally carried out, for he inspired others in the same field. To his influence we owe most of the bibliographies of special elements and allied subjects, which have been published by the Smithsonian Institution, on the recommendation of Dr. Bolton, as the chairman of the American Association committee on indexing chemical literature.

Now that the 'International Catalogue of Scientific Literature' is under way, a part of the work for which Dr. Bolton was so solicitous has become an accomplished fact. The Smithsonian Institution has for the present ceased publishing special bibliographies of chemical subjects, and in view of the immense mass of nineteenth century scientific literature which ought to be indexed and the need of its systematic treatment, this is undoubtedly wise. Under the circumstances it is doubtful if there is longer reason for the continuance of the association committee, of which Dr. Bolton was from the first chairman and moving spirit. In the field of chemical bibliography, he will have no successor.

JAS. LEWIS HOWE.

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#### SCIENTIFIC JOURNALS AND ARTICLES.

*The Journal of Experimental Zoology*, Vol. II., No. 3 (August, 1905), contains the following papers: 'A Study of the Germ Cells of *Aphis rosæ* and *Aphis ænotheræ*,' by N. M. Stevens. Only one polar body is formed, and there is no reduction in the number of chro-

mosomes in either the male or the female parthenogenetic generations. Reduction in the sexual germ cells is effected by longitudinal pairing of like chromosomes. The behavior of the chromosomes in *Aphis* exactly fulfils the conditions required by Mendel's law of heredity; and their form and size relations offer support to the theory of the 'individuality of the chromosomes.' The results also suggest that sex may be determined in *Aphis* by a change in dominance of the sex-character, brought about by external conditions. 'Regeneration in *Polychærus caudatus*,' by N. M. Stevens and A. M. Boring. So far as regeneration in *Polychærus* has been tested by the authors it seems to be largely a question of 'organization' and 'totipotence' of material, modified in many cases by the folding under and uniting of the anterior cut surfaces. Histological examination of the regenerated parts shows the process to be one of pure morphallaxis. 'The Relation of the Degree of Injury to the Rate of Regeneration,' by Charles Zeleny. The rate of regeneration of a removed chela of the cray-fish is greater when other appendages are removed at the same time than when it alone is removed. A similar result was obtained with other forms, disproving the common belief that an increase in the degree of injury to an animal lowers its vitality and thereby diminishes its capacity for repairing sustained injuries. 'Studies on Chromosomes: 1. The Behavior of the Idiochromosomes in Hemiptera,' by Edmund B. Wilson. The author gives an account of the distribution of the chromosomes to the spermatozoa in several species of Hemiptera, and shows that two classes of spermatozoa are formed, in equal numbers, which differ only in respect to the size of one of the chromosomes (called the 'idiochromosome'). A discussion is given of the bearing of the facts on Mendelian inheritance, sex-determination, and the origin and meaning of the accessory chromosomes. 'The Movements of the Swimming Plates in Ctenophores, with Reference to the Theories of Ciliary Metachronism,' by G. H. Parker. Experiments were made upon *Mnemiopsis* and *Pleurobrachia* and the conclusion reached that transmission of the im-

pulse to ciliary movement is neuroid in character, though this is probably supplemented by mechanical transmission. 'On a General Theory of Adaptation and Selection,' by Henry Edward Crampton. The 'Principle of the Correlative Basis for Selection' is developed upon the results of the author's statistical and experimental studies upon saturnid lepidoptera. The principle states that selection proceeds with reference to the condition of correlation of the organism, and that this condition involves the whole series of external influences as well as all the internal 'characters' of individuals. 'Experimental Studies on the Development of the Eye in Amphibia: II., On the Cornea,' by Warren Harmon Lewis. The cornea will not form without the optic cup or lens coming into contact with the ectoderm, and the influence of these organs can cause corneal formation in ectoderm which under normal conditions never gives rise to a cornea. The cornea is neither predetermined nor self-differentiating.

THE July-August number of the *Journal of Geology* contains an article by Professor W. M. Davis, entitled 'The Geographical Cycle in an Arid Climate,' which he considers under the subheadings of 'initial, youthful and mature stages' and 'the beginning of old age.' Professor Davis concludes that 'the scheme of the arid cycle thus seems to be as well supported by appropriate facts as is the scheme of the normal cycle.' Mr. E. S. Bastin furnishes a 'Note on Baked Clays and Natural Slags in Eastern Wyoming.' Professor Charles S. Prosser contributes an article on 'The Delaware Limestone' which is the upper formation of the Devonian limestones of Ohio, while the lower one is known as the Columbus limestone. It is shown that the limestone in the northern part of the state, which Newberry named the Sandusky and supposed to be the upper formation, really represents the Columbus and, therefore, the formation name Sandusky is dropped and Orton's later one—Delaware limestone—adopted. Mr. Richard S. Lull has a paleontological paper, entitled '*Megacerops Tyleri*, a new species of Titanotheres from the Bad Lands of South Dakota,' illustrated by

two plates. The number concludes with a "Comment on the 'Report of the Special Committee on the Lake Superior Region'" by Dr. Alfred C. Lane, stating why he "was willing to accept 'Laurentian' as a term apparently stratigraphic and coordinate with stratigraphic terms."

THE July number of the *American Geologist* contains a biographical sketch with portrait of the late 'Clarence Luther Herrick,' by Professor W. G. Tight. Dr. Ida H. Ogilvie contributes an article on 'The High Altitude Conoplain; a Topographic Form Illustrated in the Ortiz Mountains' of New Mexico. The conoplain is named and described as the plain sloping away from the Ortiz laccolith on all sides which has been partly built and partly cut. Professor W. O. Crosby publishes the first installment of an article on the 'Genetic and Structural Relations of the Igneous Rocks of the Lower Neponset Valley, Massachusetts,' which is stated to be an advance presentation, in outline, of a portion of 'the author's detailed and systematic study of the Geology of the Boston Basin.'

WE have received notice that in October next will be issued the first number of *The Journal of Biological Chemistry*, designed for the publication of original investigations of a chemical nature in the biological sciences, whether concerned with the phenomena of animal or of vegetable life. Without rigidly defining the scope of the *Journal*, it may be stated that its pages will be open (1) to workers in zoology and botany and the branches of knowledge in which these sciences are applied, for such of their researches as are of a chemical or physico-chemical nature; (2) to workers on the chemical side of the experimental medicinal sciences, as physiology, pathology, pharmacology, hygiene, physiological chemistry and bacteriology; (3) to those who are engaged in any branch of clinical medicine, when their researches are of a chemical nature; (4) to the specialist in organic chemistry, who will find here a fitting place for the publication of researches which have biological or medical interest. Contributors will be allowed prior publication of announcements or

abstracts in other journals. Every legitimate effort will be made to bring the *Journal* to the notice of foreign readers and workers. At least six numbers will be issued yearly and will constitute a volume, each volume to contain between five and six hundred pages. The responsible editors will be John J. Abel, Baltimore, and C. A. Herter, New York. With them will cooperate as associate editors R. H. Chittenden, New Haven, Conn.; Otto Folin, Waverly Mass.; William J. Gies, New York; Reid Hunt, Washington, D. C.; Walter Jones, Baltimore, Md.; Waldemar Koch, Columbia, Mo.; J. H. Kastle, Lexington, Ky.; Graham Lusk, New York; Jacques Loeb, Berkeley, Cal.; P. A. Levene, New York; A. B. Macalium, Toronto, Canada; J. J. R. McLeod, Cleveland, O.; L. B. Mendel, New Haven, Conn.; F. G. Novy, Ann Arbor, Mich.; W. R. Orndorff, Ithaca, N. Y.; Thomas B. Osborne, New Haven Conn.; Franz Pfaff, Boston, Mass.; A. E. Taylor, Berkeley, Cal.; V. C. Vaughan, Ann Arbor, Mich.; Alfred J. Wakeman, New York; Henry L. Wheeler, New Haven, Conn.

#### DISCUSSION AND CORRESPONDENCE.

##### THE MUTATION THEORY.

THE paper by Professor White, beginning on page 105 of this volume, although, it seems to me, somewhat obscure in diction at times, as for instance near the bottom of the first column on page 109, where the expression 'rare genera' probably means isolated genera, is nevertheless most interesting and opens up many lines of thought and contemplation. There seems to be but little doubt that the main argument is wholly correct. The facts have of course long been known, and, in the Darwinian hypothesis relating to the origin of species by gradual evolution, an attempt is made to explain them by lost records or long time intervals of upheaval and denudation, the changes in species being gradually brought about in the meantime in some other region or environment. This assumption will not satisfy the long array of observed facts, however, especially in the case of land animals, and we are forced to adopt some such theory as that of